Information asymmetry, disclosure and foreign institutional investment: an empirical investigation of the impact of the Sarbanes-Oxley Act

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Nida Abdioglu
Manchester Accounting and Finance Group (MAFG),
Manchester Business School,
The University of Manchester, UK.
Booth Street West, Manchester, M15 6PB
MBS Crawford
E-mail: nida.abdioglu@postgrad.mbs.ac.uk

Vassiliki Bamiatzi (*)
Assistant Professor
Leeds University Business School, University of Leeds,
Maurice Keyworth Building,
Leeds, LS2 9JT, United Kingdom,
Phone: +44 113 343-8292
E-mail: v.bamiatzi@lubs.leeds.ac.uk

S. Tamer Cavusgil
Fuller E. Callaway Professor
Institute of International Business
J. Mack Robinson College of Business, Georgia State University,
Atlanta, United States, Room: RCB 1438
Phone: +1 404-413-7284
E-mail: cavusgil@gsu.edu

Arif Khurshed
Professor
Manchester Accounting and Finance Group (MAFG),
Manchester Business School,
The University of Manchester, UK.
Booth Street West, Manchester, M15 6PB
MBS Crawford
E-mail: arif.khurshed@mbs.ac.uk

Konstantinos Stathopoulos
Associate Professor
Manchester Accounting and Finance Group (MAFG),
Manchester Business School,
The University of Manchester, UK.
Booth Street West, Manchester, M15 6PB
MBS Crawford
Tel: 44 (0) 161 275 6863
E-mail: k.stathopoulos@mbs.ac.uk

(*) Corresponding Author

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1. Introduction

The 2012 U.S. Department of the Treasury report shows that foreign holdings of U.S. equities have almost tripled over the last decade from $1.395 trillion in 2002 to $3.830 trillion in 2011. Nearly 80 percent of these foreign holdings are accounted by foreign institutional investors (FII).[i] What is interesting is that this remarkable rise in foreign holdings of U.S. equities took place despite the passage of the Sarbanes-Oxley Act (SOX) in 2002 by the U.S. Congress.[ii] According to the extant literature, the enactment of SOX introduced significant compliance costs, which could lead U.S. firms to lower profitability and overall performance (Ahmed, McAnally, Rasmussen, & Weaver, 2010; Linck, Netter, & Yang, 2009). Thus, a plausible consequence of the enactment of SOX would have been reduced interest on the part of foreign investors in U.S. equities. Yet the opposite happened. Why?

The rising importance of foreign institutional investment in the U.S. is not only being closely watched by academics (Forbes, 2010) but also by the members of the U.S. Congress (Jackson, 2010).[iii] Yet despite the increasing interest, our understanding of the factors influencing FII behavior still eludes us. The findings of the research reported here shed light on the topic by examining the role that firm-level disclosure and transparency plays on FII decisions. Acknowledging that investment preferences diverge among different types of institutional investors, we examine how ***passive*** **investors** – banks and insurance companies – in comparison to ***active*** **investors** – investment companies, independent investment advisors and public pension funds – react to an increase in firm-level disclosure and transparency and, hence a reduction in information asymmetry. This investigation is particularly relevant given

that the extant literature has long reported the differences in monitoring activity between passive and active investors (Brickley, Lease, & Smith Jr., 1988; Van Nuys, 1993; Payne, Millar, & Glezen, 1996; Bushee, 1998; Gillan & Starks, 2003; Almazan, Hartzell, & Starks, 2005; Borokhovich, Brunarski, Harman, & Parrino, 2006, among others), hence their differing exposure to the consequences of information asymmetry.

Information asymmetry exists when knowledge about a firm's returns is unequally distributed among its shareholders and its investors. Provoking mistrust and an overall unwillingness to trade (Welker, 1995), the implications of information asymmetry on investment decisions are well recognized (Habib & Zurawicki, 2001; Myers & Majluf, 1984; Stiglitz, 2002). Considerable attention has been devoted to understanding the phenomenon of information asymmetry and its implications. Information disclosure and transparency practices, either voluntary or regulative, have been consistently touted as solutions to information asymmetry (Core, 2001; Healy & Palepu, 2001).

The issue of disclosure and transparency is fundamental for institutional investors. Being continually monitored and evaluated, institutional investors are known to be rather *'prudent'* in their investment decisions, ensuring not only that they are "intrinsically sound, but would [also] be considered by others to be…reasonable, well-informed, and prudent" (Badrinath, Gay, & Kale, 1989: 607). Hence corporate disclosure and transparency have become indispensable elements for institutional investors, positively affecting their decisions for investment (Healy, Hutton, & Palepu, 1999). The empirical literature provides strong support for this premise, clearly showing institutional investors' preference for investments exhibiting high visibility and low risk (Bushee & Noe, 2000; Diamond & Verrecchia, 1991).

Even more prominent are the patterns identified among FII; they not only seek the safest firms to invest in – for example, large firms with high turnover (Covrig, Lau, & Ng, 2006) and firms with low ownership concentration (Dahlquist, Pinkowitz, Stulz, & Williamson, 2003) – but also those operating in relative safe institutional environments. Indeed, Aggarwal, Klapper, and Wysocki (2005) revealed that U.S. mutual funds typically invest in countries with strong accounting standards and legal frameworks. Similarly, Gelos and Wei (2005) found that foreign mutual funds invest heavily on less opaque emerging markets, while Chan, Covrig, and Ng (2005) showed that international investors avoid countries with government expropriation risk.

Acknowledging the importance of corporate disclosure and transparency in minimizing information asymmetry, we explore the impact of SOX on foreign institutional investment in U.S. firms since its adoption in 2002. We posit that post-SOX – with the expected increased amount of disclosure, and the resulting reduction in information asymmetry in U.S. firms – FII should find the prospect of investing in the U.S. more attractive. If this expectation is affirmed, then one could also argue that SOX was successful in achieving one of its objectives. This is important since the impact of SOX on the U.S. economy has been an open debate.

In order to confirm our conjecture that information asymmetry considerations drive FII decisions, it is important to examine the behavior of active and passive FII separately. Historically, passive investors have expended minimum effort in monitoring their investee firms, mainly because of the costs of acquiring private information. Yet since SOX was enacted, one would expect that, post-SOX, such costs should be lower because of reduced information asymmetry. This should attract post-SOX higher foreign investment levels in firms that are not the traditional clientele of FII, such as firms with high private information

levels. We expect passive investors to primarily drive this trend since they gain the most from a reduction in the value of private information.

The present research contributes to the literature in two distinct ways. First, we inform the international business scholars about the impact of corporate disclosure and transparency on foreign investment decisions. The role of knowledge and information accessibility has already been noted in the international business literature: "Increased knowledge of a foreign country reduces both the cost and the uncertainty of operating in a foreign market, and should increase the probability of an investment being made in that country" (Benito & Gripsrud, 1992, p. 462). Surprisingly though, this body of literature has only implicitly explored the role of information asymmetry and of corporate disclosure, with most studies addressing solely one group of investors, the foreign direct investors (Li & Filer, 2007). We address this gap by concurrently examining the influence of corporate disclosure on foreign investment, and specifically on the neglected group of institutional investors.

Second, we contribute to the institutional investment literature by examining the benefits bestowed by the implementation of a new regulatory regime, the SOX act, on foreign investment. Prior studies focus on the costs imposed on both domestic and foreign U.S. listed firms by the enactment of SOX; only a few of them place any emphasis on the benefits associated with this regulation. In addition, no prior study has investigated the impact of this regulation on foreign institutional investment preferences. We bridge this gap in the literature by addressing two important questions that have been rather neglected since the introduction of the SOX act: (a) *What has been the impact of SOX on investments by FII?* (b) *How have the investment preferences of different types of FII been affected by SOX?*

The remainder of the paper is organized as follows. First we provide a brief review of the relevant empirical literature on the SOX legislation. We then present the conceptual foundations of this investigation and advance our hypotheses. Details of the database, variables, and methodology follow, as well as the analysis of the results and robustness tests. Finally, we conclude with a discussion, conclusions and suggestions for future research.

2. Studies on the Sox Effect

Despite the globalization of the markets, we have not yet achieved a convergence of government practices and corporate disclosure policies (Aguilera & Jackson, 2003; Johnson, Schnatterly, Johnson, & Chiu, 2010; García-Sánchez, Rodríguez-Ariza, & Frías-Aceituno, 2013). It appears that each time a new regulatory regime is introduced in a country its effects can be quite idiosyncratic, with significant implications on international investment and business. The post-legislation environment of the SOX act provides an intriguing research context as it enables us to explore the effects of reduced information asymmetry on foreign institutional investment in U.S. equities, a research question yet to be adequately addressed.

Several strands of the extant literature examine the direct and indirect impact of the SOX act on U.S. firms. While one set of studies focused on the market reaction to SOX-related events and found conflicting results (Chhaochharia & Grinstein, 2007; Jain & Rezaee, 2006; Li, Pincus, & Rego, 2008; Zhang, 2007), another stream addressed the impact of SOX on firm behavior. Results suggested that firms strive to avoid implementing SOX. For example, post-SOX, the frequency of firms going private has increased modestly (Engel, Hayes, & Wang, 2007); the number of firms going dark, i.e., ceasing filing with the SEC, has gone up (Leuz, Triantis, & Wang, 2008); and the incentives for smaller firms to remain small have increased (Gao, Wu, & Zimmerman, 2009).

Several studies examined the impact of SOX on foreign firms too, either listed or seeking a listing in the United States. For example, Litvak (2007) found that during the period when key announcements related to the implementation of SOX were being made, the stock prices of SOX-exposed foreign firms declined significantly. Piotroski and Srinivasan (2008) examined the listing preferences (the choice between the U.S. exchanges and the London Stock Exchange) of foreign firms, post-SOX. Even though they reported no change for large firms, they found that the likelihood of small foreign firms listing on the NASDAQ decreased. In a *Wall Street Journal* article, Karmin and Lucchetti (2006) argued that, post-SOX, the increased cost of issuing shares has resulted in many, mainly non-U.S. firms de-listing from the U.S. and moving to alternative markets.

An additional strand of the literature documented the direct costs of SOX. For example, Linck, et al., (2009) identified increased director and officer insurance premiums and more costly audit committees among the costs of SOX. Ahmed, et al., (2010) quantified the net cost of SOX and documented a significant drop in firms' cash flow profitability post-SOX.

While most of these studies highlight the negative effects of SOX, a few papers discussed its benefits. These benefits include: enhanced trust (Coates, 2007; Li, et al., 2008), increased transparency (Arping & Sautner, 2013), and lower information risk (Ashbaugh-Skaife, Collins, Kinney, & LaFond, 2009) in U.S. capital markets.

3. Conceptual Framework And Hypothesis Development

3.1. Information Asymmetry, Corporate Disclosure, and Foreign Investment

Information asymmetry is one of the most celebrated topics in accounting, finance and economics. Challenging the foundations of long-established paradigms on perfect market and competitive equilibrium principles, the information asymmetry phenomenon has had a profound effect on our understanding of the market mechanisms and the associated implications on investment behavior (Miller & Rock, 1985; Stiglitz, 2002). It is now widely accepted that information asymmetries are inevitable. Hence the critical question one should address is not whether information irregularities exist in a market but, instead, how markets handle them and even more importantly how well they do so: "The most fundamental reason that markets with imperfect information differ from those in which information is complete is that, with imperfect information, market actions or choices convey information" (Stiglitz, 2002, p. 468). Naturally, market structure became the point of attention. Corporate governance and disclosure mechanisms, government intervention and corruption levels, market liquidity, ownership concentration, and the stage of market development are some of the key criteria widely utilized to assess the risk profile of a market and its overall attractiveness to investors, especially foreign ones (Forbes, 2010; Healy & Palepu, 2001; Welker, 1995).

Interestingly, in the international business literature, the impact of information asymmetry on foreign investment has only been implicitly explored. A great number of studies have focused on the risk and uncertainties induced by a foreign environment (Fitzpatrick, 1983; Miller, 1992), with Miller providing a comprehensive account of the risks induced by the general environment, the industry and the firm. Another strand of the literature has focused on identifying the investment strategies, which can best manage the above mentioned risks

(Buckley & Casson, 1998). Yet irrespective of their invaluable insights, none of these studies has specifically concentrated on the information asymmetry effects and their impact on investment decisions. In addition, the vast majority has concentrated on decisions made by firms investing into foreign countries for operational purposes (FDI) and not by institutional investors (Li & Filer, 2007). As such our understanding of how information asymmetry impacts on FII decisions and the role of corporate disclosure on their investment choices remains still unexplored.

Scholars consent that the effects of information asymmetry are particularly amplified among foreign investors, severely affecting their investment decisions (Brennan & Cao, 1997; Habib & Zurawicki, 2001; Leuz, Lins, & Warnock, 2010; Slangen & van Tulder, 2009). Unfamiliarity with the norms and rules of the foreign market, particularly of the relationships formed among its actors (managers, shareholders, and the government), cultural uncertainty and general corruption, can hamper their evaluation of a firm's governance structure, and as such their overall assessment and interpretation of the information received through it. Responding to this particular predicament, foreign investors tend to hold large shares of domestic assets in their portfolio, constantly hedging against the risks associated with a foreign market (Dahlquist, et al., 2003; Leuz, et al., 2010). To overcome their natural 'home bias' instincts, and invest in foreign markets, strong assurances of information disclosure and efficient governance mechanisms are necessary.

The extant literature identifies the reasons of institutional investor sensitivity to corporate disclosure (Bushee & Noe, 2000). First, more disclosure reduces the price impact of trades; this attracts investors to invest in high disclosure stocks (Gompers & Metrick, 2001; Healey, et al., 1999). Second, high disclosure levels substitute for private information collection, thus

allowing professional investors to better identify profitable investment opportunities. Finally, institutional investors value higher corporate disclosure since it allows them to carry out their corporate governance activities, for example, monitoring managerial performance, at a lower cost.

Naturally, FII will be especially sensitive to corporate disclosure policies and mechanisms that alleviate risks arising from information asymmetries. Indeed, there is ample empirical literature supporting this argument. Aggarwal, et al. (2005) revealed that U.S. mutual funds typically invest in countries with strong accounting standards and legal frameworks. Similarly, Gelos and Wei (2005) found that foreign mutual funds invest heavily on less opaque emerging markets, while Chan, et al. (2005) showed that international investors avoid countries with government expropriation risk. Covrig, et al. (2006), after examining the stock preferences of both domestic and foreign fund managers from 11 developed countries, revealed that although both types of investors tend to choose the 'safest' stocks to invest in – those with high return on equity, large turnover and low variability – foreign investors are further influenced by stock's visibility and recognition in the global markets. These differential preferences are mainly attributed to the cost of information in each market and the cost-benefit trade-offs from investing in too many different markets.

In addition, Bradshaw, Bushee, & Miller (2004) found that when U.S. investors invest in non-U.S. firms they exhibit a preference towards firms that follow U.S. GAAP. They argued that the adoption of U.S. GAAP by non-U.S. firms makes it easier for U.S. investors to process the information included in the accounts since it is more familiar to them. The lower information processing costs lead to lower home bias, thus higher foreign investment levels. Thus, the main argument put forward was that familiarity reduces home bias which is consistent with

theoretical predictions (Merton, 1987; Huberman, 2001; Chan, et al., 2005).[iv] Furthermore, Covrig, Defond & Hung (2007) investigated the voluntary adoption of IAS and whether it enhances the ability of firms to attract foreign capital. They argued that the (additional) information disclosed through IAS is delivered in a familiar form to foreign investors, which allows them to process the information at lower cost. Finally, DeFond, Hu, Hung, & Li (2011) verified the argument that the cross-country uniformity on accounting standards imposed by the introduction of IFRS leads to greater comparability of accounting statements, therefore lower information processing costs and lower home bias.

3.2. Information Asymmetry Reduction, SOX and Institutional Investment

Prior literature suggests that a high level of disclosure in a company/country attracts more institutional investment. Several studies in the literature document the positive relationship between institutional investment and high levels of corporate disclosure (for example, Falkenstein, 1996; Healy, et al., 1999; Bushee & Noe, 2000; Gompers & Metrick, 2001). The SOX act was implemented with a view to increase the accuracy and reliability of corporate disclosure, by imposing high disclosure requirements on firms listed on U.S. exchanges (Hamilton & Trautmann, 2002). As Apring and Sautner (2013) argued, several sections of the Act require additional financial disclosures on off balance sheet transactions and pro forma figures (Section 401), insider trading (Section 403) and material changes in firms' operations or financial condition (Section 409). Apring and Sautner (2013) found that these requirements lead to less opaque corporate disclosures. Ashbaugh-Skaife, et al. (2009) also argued that SOX's Section 404 significantly improves the effectiveness and quality of internal control systems, both managerial and audit. They found that these improvements result in a reduction in the cost of equity for the average U.S. firm. We argue that, post-SOX, an improvement in the information environment of U.S. firms[v] should lead to lower information asymmetry, and

consequently the need for less effort (thus lower costs) in monitoring managerial actions. Such improved market conditions should attract investors from foreign countries and increase the level of foreign institutional investment in the U.S., post-SOX. Thus:

Hypothesis 1: Post-SOX, information asymmetry reduction will result in higher foreign institutional investment.

3.3. SOX Effects on FII – The 'Prudent Man' Rule

Next, we investigate the impact of SOX on firm-specific investment preferences of FII. Historically, in line with the prudent man rules, institutional investors have invested in 'prudent firms', that is, firms that institutional investors find easy to defend in court.[vi] Prior studies empirically translate these to be large firms, firms with high book-to-market ratios, high liquidity, low leverage and high dividend yields (Badrinath, et al., 1989; Del Guercio, 1996). Indeed, Badrinath, et al. (1989) provided supporting evidence on the effect of prudent man rules. They showed that the level of institutional shareholdings is positively associated with firm size, past performance, company beta, trading liquidity, and listing history, and negatively associated with stock return volatility. Del Guercio (1996) also argued that institutional investors tilt their portfolios towards prudent stocks (large firms, firms with high book-to-market ratios and high liquidity) in line with prudent man behavior.

Given that SOX has resulted in a market-wide reduction in information asymmetry, it is now easier for investors to monitor even the smaller firms that are not necessarily under the media or analyst spotlight. At the same time, lower information asymmetry discourages managerial malpractice by making it easier to spot (Donaldson, 2005). Finally, SOX has substantially increased managerial accountability and litigation risk (Sen, 2007). Therefore, managers are expected to be more risk-averse (Cohen, Dey, & Lys, 2013).

In light of the above discussion, FII investment preferences towards specific firm characteristics may change post-SOX. In other words, depending on the impact of SOX on market-wide information asymmetry, FII may show an affinity towards less prudent stocks. In line with the extant literature, we classify as less prudent stocks those of smaller firms, firms with lower book-to-market ratios, lower liquidity, and higher leverage, as well as firms with lower dividend yields. We therefore propose:

Hypothesis 2: As information asymmetry is reduced post-SOX, foreign institutional investment in less prudent stocks should rise.

3.4. SOX Effects on FII – Passive versus Active Investors

Our final pair of hypotheses relates to the investment preferences of different types of FII. Post-SOX, enhanced disclosure should lead to a drop in the value of private information in the U.S. markets. We argue that this reduction in the value of private information will influence FII behavior in the United States. In line with Bushee, Carter, and Gerakos (2010)[vii], we categorize FII into active and passive investors and examine the post-SOX investment behavior of these investors in all firms, as well as in firms where the level of private information is expected to be high (high research and development (R&D) expenditure firms). The above categorization/classification is prevalent in the extant literature (e.g., Brickley, et al., 1988; Van Nuys, 1993; Payne, et al., 1996; Bushee, 1998; Gillan & Starks, 2003; Almazan, et al., 2005; Borokhovich, et al., 2006). Other names also used in the literature for the active vs. passive classification are "pressure-insensitive" vs. "pressure-sensitive" institutional investors. However, the underlying argument and the different types of investors that appear under each classification remain always the same.

According to Brickley, et al. (1988), in order to protect existing or potential business relationships, passive institutional investors (such as banks and insurance companies) tend not to put pressure on the managers of their investee firms. Since they do not want to damage their relationship with the company management, that is, face high costs of monitoring, passive institutional investors are not expected to expend effort in collecting private information (Chen, Harford, & Li, 2007). As a result, a potential reduction in the value of private information favors them greatly. On the other hand, active institutional investors (such as investment companies, independent investment advisors and public pension funds) do not actively seek business ties with the firms they invest in (Brickley, et al., 1988) and encounter lower legal restrictions on their investments. Thus, they are more likely to collect and use private information (Almazan, et al., 2005). A potential reduction in the value of private information could therefore signal a loss of competitive advantage for active institutional investors.

The additional information transparency in the U.S. markets, brought about by SOX, is expected to result in a reduction in the value of private information. As a result, we expect, post-SOX, passive foreign institutional investment in the U.S. to increase more than active foreign institutional investment. In addition, we expect this increase to be more pronounced in firms with higher levels of private information, for example, high R&D expenditure firms. Thus:

Hypotheses 3: Post-SOX, reduced information asymmetry, will result in an increase in investment by passive FII greater than that by active FII.

Hypotheses 4: Post-SOX, investment by passive FII in firms with higher levels of private information will be greater than that by active FII.

4. Research Design

4.1. Sample and Data Sources

We employ the universe of the Thomson Reuters 13F database for the holdings of FII in U.S. firms over the period 1999 to 2012.[viii] We include all constituent firms of the following indices: S&P 500, S&P MidCap 400 and S&P SmallCap 600.[ix] In total, we gather information on the holdings of institutional investors from 18 different foreign countries.

Compustat, the Investor Responsibility Research Centre (IRRC), IBES and CRSP provide the relevant firm-level data at fiscal year-end. The 13F filings report institutional investor holdings on a quarterly basis. We use the institutional holdings reported for the last quarter of each fiscal year and merge these with the other accounting and market data. After excluding firm-years with missing values for some of the accounting data, in particular firm-level governance information, we end up with an unbalanced panel of 15,887 firm-years for 2,752 unique firms.

4.2. Empirical Models

To test our hypotheses we estimate the following regressions:

$$FIO_{f,t} = a_0 + a_1 SOX + a_z X_{f,t} + YD + \varepsilon_{f,t} \quad (1)$$

$$FIO_{f,t} = \delta_0 + \delta_1 SOX + \delta_z X_{f,t} + \delta_v SOX * X_{f,t} + YD + \varepsilon_{f,t} \quad (2)$$

$$PASSCONS_{f,t} = \beta_0 + \beta_1 SOX + \beta_2 R\&D_{f,t} * SOX + \beta_3 R\&D_{f,t} + \beta_z X_{f,t} + YD + \varepsilon_{f,t} \quad (3)$$

The dependent variable (*FIO*) is the same in models 1 and 2. $FIO_{f,t}$ is the total percentage ownership of a firm's equity by FII in firm *f* at time *t*. It is defined as the ratio of the shares

held by the FII in the firm to the firm's shares outstanding at fiscal year-end. In separate tests we also use *ACTIVEFIO* (*PASSIVEFIO*), which is the ratio of the shares held by active (passive) FII in the firm to the firm's shares outstanding at fiscal year-end. *PASSCONS* is the concentration level of passive foreign institutional investment. It is equal to total foreign passive institutional ownership divided by total foreign institutional ownership in firm *f* at time *t*. We separate institutional investors into active vs. passive institutional investors in line with Bushee, et al. (2010). We classify independent investment advisors, investment companies and public pension funds as active institutional investors. We classify banks, insurance companies, university and foundation endowments, corporate pension funds and miscellaneous investors as passive institutional investors. *SOX* is a dummy which is equal to one for firm-years after 2002 and zero otherwise.

In each model, we use the following vector of firm-level control variables (*X*): firm size, dividend yield, book-to-market ratio, turnover ratio, leverage, return on equity, cash level, DINDEX, stock return, analyst following and audit quality. $SOX * X$ is a vector of interaction terms, created by interacting each control variable with the *SOX* dummy. *R&D* is a proxy of the level of private information in firm *f* at time *t*. *R&D*SOX* is the interaction between *R&D* and the *SOX* dummy. *YD* are year dummies.

Model 1 allows us to test our first hypothesis that, post-SOX, we expect higher foreign institutional investment due to the SOX-led reduction in information asymmetry (H1). For our argument to be verified, we anticipate the SOX coefficient (α_1) to be positive and statistically significant. Similarly, with model 2, we test our second contention that, post-SOX, foreign investment will be higher in less prudent stocks (H2). We expect various coefficients of the interaction terms (δ_v) that capture the marginal SOX effect on foreign investor preferences

regarding firm characteristics to be significant and with a sign confirming the notion that FII invest more in less prudent stocks, post-SOX. Model 3 test our third and fourth hypotheses that, post-SOX, investment by passive FII will increase more than the investment by active FII (H3), as well as that passive FII will invest more in firms with higher levels of disclosure compared to active FII (H4). For these arguments to stand, we would expect the coefficients β_1 and β_2 to be positive and statistically significant.

We closely follow the extant literature in identifying and defining our control variables. In particular:

Firm Size (SIZE) is the market value of equity at fiscal year-end (Compustat item MKVALT). The institutional ownership literature mostly finds a positive relationship between firm size and institutional ownership (for example, Badrinath, et al., 1989; Bennett, Sias, & Starks, 2003; Cready, 1994; Dahlquist & Robertsson, 2001; Falkenstein, 1996). Dahlquist and Robertsson (2001) explained this based on institutional investors' preference for investing in well-known firms and firms with which they are familiar.

Dividend Yield (DY) is the dividend per share (Compustat item DVPSX-F) divided by the fiscal year-end share price (Compustat item PRCC-F). According to Del Guercio (1996), institutional investors should invest in high dividend yield stocks, in line with prudent man rules.

Book-to-Market Ratio (BM) is defined as the logarithm of the ratio of the book value of common equity outstanding (Compustat item CEQ) to the market value of equity. High (low) values represent value (growth) firms. Lakonishok, Shleifer, and Vishny (1994) and Dahlquist and Robertsson (2001) found that institutional investors prefer growth firms. In contrast, Ferreira and Matos (2008) showed that U.S. (foreign) institutional investors invest more in value (growth) stocks.

Firm Market Turnover (TURN) is our measure of stock market liquidity (Dahlquist and Robertsson, 2001). We first calculate the monthly turnover of a stock. Monthly stock turnover is defined as the monthly volume of a stock (CRSP item VOL), divided by the firm's shares outstanding at the end of that month (CRSP item SHROUT). An annual figure is obtained by taking the average of the twelve monthly observations. Institutional investors prefer liquid stocks as they reduce their trading costs and also represent firms with greater information flows, hence less information asymmetry. In these firms, institutional investors can better identify and replace poor managers (Almazan, et al., 2005). Gompers and Metrick (2001) reported a positive relation between institutional ownership and market liquidity.

Leverage (LEV) is defined as the ratio of debt in current liabilities (Compustat item DLC) plus long-term total debt (Compustat item DLTT), to total assets (Compustat item AT). Bathala, Moon, and Rao (1994) examined the role of institutional ownership on managerial ownership and debt policy, and found a negative relationship between institutional investment and debt levels. In addition, Dahlquist and Robertsson (2001) used leverage as a proxy for a firm's long-term financial distress and found a negative relationship between it and foreign investment.

Return on Equity (ROE) is a measure of firm profitability. It is the ratio of net income (Compustat item NI) to common equity (Compustat item CEQ). Aggarwal, et al. (2005) found a positive relationship between return on equity and institutional investment.

Cash Holdings (CASH) are measured as the ratio of cash and short-term investments (Compustat item CHE) to total assets (Compustat item AT). Since firms with more cash are typically classified as having greater financial strength, we expect institutional investors to prefer to invest in these firms (Dahlquist and Robertsson, 2001).

Directors' Index (DINDEX) is our measure of a firm's governance quality. We follow Bushee, et al. (2010) to create DINDEX. It includes five different dummy variables: CEO-chairman

duality, the presence of board interlocks, attendance of board meetings, board size and the percentage of independent directors. Bushee, et al. (2010) classify firms where the CEO is also the Chairman of the board as having lower governance quality. Our CEO dummy variable takes the value one if the two positions are combined and zero otherwise. We define as interlocked directors those directors who serve on each other's boards, and their presence on a board is considered an indicator of weaker governance. This is because these directors might have incentives to vote in ways that benefit their counterparts and themselves (Bushee, et al., 2010). We create a variable (DLOCK), which is equal to one if there are any interlocks on the board of directors and zero otherwise. Less attendance of board meetings is associated with less successful monitoring of the management team. Therefore, a low level of attendance is an indication of weaker governance. We create a dummy variable (DBAD), taking the value one if any of the directors misses 75% or more of the board meetings and zero otherwise. The proxy for board size is the logarithm of the number of directors (LNDIR). If the board size is large, Bushee, et al. (2010) expect there to be greater problems with communication, coordination and decision making. Next, fewer independent directors on the board indicate weaker corporate governance of the firm. Since independent directors' careers do not depend heavily on the management team, they are considered to be more effective monitors of a firm's managers. We calculate the percentage of directors that are dependent (PNID). We split the distribution of LNDIR and PNID into high and low groups using k-means cluster analysis. We create dummies for these two variables which are equal to one if they are in the high group and zero otherwise. We end up with five dummy variables; DINDEX is the sum of these five dummy variables. A value of zero (five) indicates boards with the strongest (weakest) governance structures. Bushee, et al. (2010) found a negative relation between institutional ownership and DINDEX.

Stock Return (RETURN) is a measure of annual stock returns. We annualize the average daily return (CRSP item: RET) over a year using the number of trading days in that year. Ferreira and Matos (2008) reported a positive relationship between foreign institutional investment and stock returns.

Analyst Following (ANALYST) is the number of analysts covering a firm in a given year. We create this variable by calculating the total number of unique analyst codes (IBES item: ANALYS) for a given firm each year. O'Brien and Bhushan (1990) found a positive relationship between institutional ownership and analyst following.

Audit Quality (AUDIT) is a dummy variable. It is equal to one if the firm's auditor in a given year is one of the Big-5 auditing firms (Compustat item: AU), that is, Arthur Andersen, Ernst & Young, Deloitte, KPMG and PricewaterhouseCoopers, zero otherwise. Kane and Velury (2004) found that institutional investors prefer firms with high audit quality.

Research and Development (R&D) is our proxy for the level of private information in a firm. Following the extant literature (for example, Aboody & Lev, 2000), we define it as the ratio of R&D expenditure (Compustat item XRD) to the book value of assets (Compustat item AT). Institutional investors avoid investing in high private information firms (Graves & Waddock, 1990; Jacobs, 1991; Porter, 1992).

We use firm fixed effect panel regressions to test each model.[x] This allows us to account for time-invariant firm-level omitted variables that could bias our results; these firm fixed effects control for unobserved heterogeneity in firm characteristics that could affect the investment decision of foreign investors, for example, geographic location, distance from financial centers, corporate culture, exposure to foreign corporate cultures, and so on.[xi] We also use year dummies in all our regressions in order to control for cross-sectional dependence (Gujarati, 2004). The year dummies also help us to remove deterministic time trends from our

analyses (see the robustness section for more details). Finally, in all regressions we use heteroskedasticity robust standard errors; we cluster them at the firm level to control for time-series dependence. This is particularly important in our setting since ownership variables typically have high autocorrelation.

4.3. Descriptive Statistics

Table 1, Panel A, shows the time series of institutional investment by foreign (*FI*), active foreign (*Active*) and passive foreign (*Passive*) institutional investors in the U.S. between the years 1999 and 2012.[xii] It also reports the percentage of passive to total foreign investment (*PC*). Panel A illustrates that *FI* increases significantly between 1999 and 2008. The level of foreign institutional ownership in U.S. firms has doubled (8.42% compared to 4.01%). This is mainly driven by passive foreign investors, who increase their holdings 245% during this period. There is a drop in *FI* after the onset of the recent financial crisis (2009-2012). This is consistent with recent evidence that home bias increases during global crises since there is retrenchment of gross capital outflows by foreign investors (Forbes & Warnock, 2012). However, *FI* during that period is still economically and statistically larger compared to the pre-SOX period. For example, in 2012 *FI* is 52% larger compared to the average *FI* during the pre-SOX period (6.56 vs. 4.32). Interestingly, the drop in *FI* is mainly driven by active FII as illustrated by the increase in *PC* during 2010-2012. In this study, we argue that the enactment of SOX is one of the reasons behind the increase in *FI* and *Passive* post-SOX; we test this line of argument in the following sections.

---------- Insert Table 1 about here ----------

Table 1, Panel B, presents the descriptive statistics of the firm-level variables used in this study. We winsorize size, dividend yield, leverage, return on equity and stock return at the 1% level (two tails), since the original distributions of these variables are skewed. The average

firm in the sample has more than 5% foreign ownership, 80% of which comes from passive FII. It has a market value of $7.5 billion and a dividend yield of 1%; both its leverage and turnover stand at 21%. Return on equity is 10%, stock return is 7%, the book-to-market ratio is 0.14, DINDEX is 1.7 and the ratio of cash holdings to total assets is 14%. R&D expenditure accounts for 3% of the book value of assets. Also, the average firm is followed by 13 analysts; 93% of the firms in our sample employ a Big-5 auditor.

At a univariate level, *FIO* is positively and significantly correlated to *SOX*. The magnitude of the Pearson coefficient is the largest compared to all other coefficients for *FIO* (untabulated result).This result provides initial evidence on the importance of the enactment of SOX as a determinant of foreign institutional investment in U.S. firms.

5. Empirical Results

5.1. SOX Effect on FIO

We begin our multivariate analysis by examining whether the enactment of SOX has had an effect on the level of foreign institutional investment in U.S. firms. Table 2 presents the results of firm fixed effect panel regressions where the dependent variable is *FIO*. Foreign institutional investment is positively associated with SOX. This result is consistent with our hypothesis 1 suggesting that the SOX-led reduction in information asymmetry is positively influencing FII decisions. Furthermore, the magnitude of the SOX coefficient is indicative of a large SOX effect. Almost 5% FIO is associated with the enactment of SOX. Still, caution should be exercised in interpreting this coefficient since it is possible that (omitted) characteristics, not controlled by our firm and year variables, inflate the magnitude of the SOX effect. The difference-in-differences analysis in the robustness section addresses this issue.

---------- Insert Table 2 about here ----------

To further support our inferences, we investigate separately the investment preferences of active and passive institutional investors, shown in columns 2 and 3, respectively. We expect that passive institutional investors drive the FIO-SOX relation. This is because passive institutional investors are bound to benefit the most from a reduction in the value of private information; hence we expect the SOX effect to be more pronounced for them. We find positive, significant SOX coefficients in both regressions, that is, both types of institutional investors increase their stakes in U.S. firms, post-SOX. However, the magnitude of the coefficients reveals that the increase in overall foreign investment levels is mainly driven by passive investors, i.e., the coefficient for passive FII is 4.65 compared to 0.19 for the active ones. We return to this issue later in this section.

The signs of the coefficients of the control variables included in the analysis are in line with those reported in prior studies. In Table 2, column 1, we report that FII prefer to invest in value firms with high turnover ratios, high past performance, high cash holdings, better governance[xiii] and high analyst following. These preferences are mainly driven by the passive FII. In contrast, the active FII are primarily attracted by dividend yields.

5.2. SOX Effects on FII – The 'Prudent Man' Rule

Table 3 reports the results of our regression analysis relating to Hypothesis 2. In this table, we report the effect of SOX on the firm-level investment preferences of FII. Our aim is to report the changes in their preferences that occur as a result of the enhanced corporate transparency and reliability, post-SOX. We interact the SOX dummy with each of the firm-specific characteristics, separately. We use all of the interaction terms in our regressions to find the SOX marginal effect on foreign institutional investment for each firm-specific characteristic.

In column 1, the dependent variable is *FIO*. Post-SOX, FII increase their holdings in smaller firms (-0.01) and those with higher leverage levels (1.01). The coefficients for the respective SOX marginal effects are both significant. We also observe (in column 3) that passive FII increase their holdings in firms paying lower dividends (-5.36) and note that they are also behind the firm size marginal effect reported in column 1, as illustrated by both the magnitude and significance of the coefficient. Overall, these results are consistent with Hypothesis 2. Indeed, FII appear to increase their investment levels, post-SOX, in firms that are not their traditional turf, that is, smaller, riskier firms. Investment in these firms is not in line with prudent man rule expectations (Del Guercio, 1996). The signs and magnitudes of the coefficients in column 3 clearly indicate that passive FII primarily drive this change in investment behavior. This finding further supports our inference that this change in investment behavior is due to a reduction in information asymmetry and the resulting negative impact of SOX on the value of private information. We provide additional results relating to this in the next section.

---------- Insert Table 3 about here ----------

We note that FIO increases in better governed (-0.24) and analyst-followed (0.03) firms, as well as firms that are more liquid (2.18), post-SOX. This is not surprising, given that the enactment of SOX has led to a market-wide improvement in corporate governance quality. The SOX-initiated reduction in information asymmetry has also led to an improvement in stock market liquidity across the board (Jain, Kim, & Rezaee, 2008). Finally, we observe that there is no marginal SOX effect on overall *FIO* for certain performance measures, such as book-to-market and return on equity ratios, as well as cash holdings.

5.3. Passive FIO and SOX

In this section, consistent with our hypotheses, we focus our discussion on the impact of the SOX enactment on passive FIO relative to active FIO. So far, our results indicate that passive FII have benefited the most from the enactment of SOX. This is illustrated by the significantly greater increase in their post-SOX holdings of U.S. equity than that for active FII. Given that passive investors do not monitor the management teams of the firms in which they invest, they stand to gain the most from a reduction in the value of private information through better disclosure and internal monitoring. We therefore expect post-SOX passive FIO to increase (relative to active FIO) in firms where the level of private information is traditionally higher, that is, high information asymmetry firms.

Table 4 reports further results relating to these predictions. The dependent variable is the foreign passive institutional investment concentration (*PASSCONS)*. It captures the investments of passive institutional investors relative to active institutional investors. In addition, we opt to use an accounting-based proxy for firm-level private information, which is commonly used in the extant literature, that is, the R&D expenditure scaled by the book value of assets.[xiv] Market-based proxies, for example measures of stock market liquidity, are not appropriate since there is a direct SOX effect on them (Jain, et al., 2008).

---------- Insert Table 4 about here ----------

Table 4, column 1, reports a highly significant positive coefficient of *SOX* (0.09), which confirms that passive FII invest more, post-SOX, in U.S. firms, relative to active institutional investors (our Hypothesis 3). In line with our predictions in Hypothesis 4, we also find a positive significant marginal SOX effect of 0.37 on the relation between firm-level private information and passive ownership concentration (column 2). Post-SOX, passive FII increase their holdings in high private information firms, more than active investors.

To further strengthen our inferences, in column 3 we run an alternative specification. Instead of using the R&D level in a firm, we split our sample into above/below the sample median R&D in year 2001, i.e., one year prior to the event. We then create a dummy variable (RD) taking the value one for above-median R&D levels and zero otherwise. This allows us to broadly classify our cross-section into high vs. low private information firms. By using the 2001 sample median we also avoid capturing any influence of the SOX enactment on R&D levels. The interaction of this variable with SOX is positive and significant (0.04), confirming our inferences.

6. Robustness Tests

6.1. Are We Simply Reporting A Time Trend or Other Confounding Effects?

A common shortcoming in studies that investigate structural breaks in an economy is that it is difficult to exclude alternative explanations based on confounding effects. A frequent criticism is that the reported relations are manifestations of time trends in the data or contemporaneous effects unrelated to the hypothesized (regulatory) effect. As a first attempt to alleviate concerns that such time trends and/or omitted variables might drive our findings, we include year dummies and firm fixed effects in all our prior analyses. Time dummies should capture deterministic (as opposed to stochastic) time trends. Firm fixed effects control for unobserved firm characteristics. In this section, we use more robust methods to deal with this issue.

The implementation of SOX was compulsory, with immediate effect, for all U.S. listed firms, apart from some small firms which were allowed more time to comply with the act, as regulators concluded that these firms would not be able to cope with the increased compliance

costs imposed by SOX.[xv] The exempted firms, called non-accelerated filers, were firms with a market value of equity lower than $75 million. We expect to see no change in the investment preferences of FII for these firms. As a result, they form an ideal control group.

The existence of non-accelerated filers in the U.S. market allows us to run a difference-in-differences (DD) estimation. This estimation helps us avoid the problem of time trends biasing our inferences, since we compare the two groups (non-accelerated vs. accelerated filers) over the same time period. It also allows us to carry out a time-series comparison (before and after the SOX enactment) between the two groups, thereby alleviating concerns regarding the impact of unobserved, omitted variables in the analysis.

In order to establish our treatment group, we create a new dummy variable (*ACCE*), which takes the value one if a firm is classified as an accelerated filer, and zero if it is a non-accelerated filer. We interact this with the SOX dummy (*SOX*). All model specifications also include the uninteracted variables and the control variables used in our prior analyses.

Table 5 reports the results of the DD regressions for total FIO, as well as for passive and active FIO.[xvi] There is a positive significant effect of SOX on FIO for accelerated filers. The effect is driven by the passive FII (0.94), consistent with our prior results.[xvii] One would have expected to find insignificant coefficients, if our prior results were simply a manifestation of a time trend in FIO or some other confounding effect. The fact that we find significant results in the DD analysis supports our conclusions regarding the positive effect of SOX on FIO. The *direct* SOX effect is economically significant. The enactment of SOX is associated with an increase of 0.54% in FII equity holdings. This is 27% (12%) the average (maximum) increase in FIO between the pre- and post-SOX periods, that is, 2% (4.47%). The economic

significance of the SOX effect on passive FIO is much more pronounced (i.e., 47% and 21%, respectively) consistent with our predictions.

---------- Insert Table 5 about here ----------

6.2. Propensity Score Matching Tests

A key assumption in the DD analysis is that, in the absence of the treatment, in this case the implementation of SOX, there would have been no difference in the average change in the dependent variable, that is, FIO, between the treatment and control groups. This is the so-called parallel trends assumption (Roberts & Whited, 2013). By definition, the non-accelerated filers are smaller firms than the rest of the cross-section. This raises concerns over whether the parallel trends assumption holds in our setting. In order to deal with this potential limitation of our DD tests, we run a series of propensity score matching (PSM) tests. PSM procedures (Rosenbaum & Rubin, 1983) help identify control firms that exhibit minimal observable differences in characteristics relative to treatment firms. Thus, for each pair of matched firms in our tests the only key difference is whether they comply with SOX or not. Therefore, using the matched firms we can isolate the impact of SOX on foreign investment and at the same time satisfy the parallel trends assumption. To implement PSM, we first calculate the probability (propensity score) that a firm with certain characteristics will have to comply with SOX. We run probit regressions where the propensity score is a function of the firm variables we also use in the DD models. Then, we run different matching algorithms (i.e., Radius, Nearest Neighbor(s) and Kernel) to create pairs of matched firms; this ensures the robustness of our results. In Table 6, we report the average treatment/SOX effect on the treated (ATT), separately for *FIO*, *ACTIVEFIO* and *PASSIVEFIO* (Panels A-C). The results are not only consistent with the DD ones (Table 5) but also stronger in terms of both economic and statistical significance, which further strengthens our inferences.

---------- Insert Table 6 about here ----------

6.3. Falsification Tests

In order to provide additional evidence of the *causal* effect of SOX on foreign investment in U.S. firms, we also run falsification (pseudo-event) tests. These tests allow us to reject the argument that our findings are driven by spurious relations. Using Monte Carlo Permutations, we randomly shuffle the treatment variable used in the DD models (*ACCE*SOX*) 10,000 times across all firms. If our results are driven by unobservable firm-specific characteristics, then we should still find a significant association between this placebo treatment variable and foreign investment. However, if SOX has an effect on foreign investment, then the random reshuffling of the treatment variable should discard any possible association between this placebo variable and FIO. In order to formally test this, we compare the coefficients of this placebo variable to the *ACCE*SOX* coefficients we get in the DD tests (Table 5). If the coefficients from the placebo variable are higher than the *ACCE*SOX* coefficient, then we would not be able to reject the null hypothesis that there is no link between treatment (*ACCE*SOX*) and outcome (*FIO*). We report the results of this analysis in Table 7. We do not observe a single instance (out of 10,000 trials) where the placebo coefficient is higher than the true coefficient. This corresponds to an implied p-value of 0.000; thus we reject the null hypothesis. This result remains when we test the SOX effect on *ACTIVEFIO* and *PASSIVEFIO*. Taken together, these falsification tests indicate that the SOX-FIO association is not spurious.

---------- Insert Table 7 about here ----------

6.4. Macro Effects

Foreign institutional investment is affected by global macroeconomic conditions. Therefore, the observed increase in FIO for U.S. firms, post-SOX, could be due to better prospects for the U.S. economy, or an increase in the global wealth available for investment in the equity

markets. A recent CRS report (Jackson, 2010) discusses the 'safe haven' effect during times of uncertainty, favorable returns on investments relative to risk, a surplus of savings in countries around the world, the well-developed U.S. financial system, and the overall stability of the U.S. economy, as reasons for the foreign capital inflows into the U.S. In principle, the analyses we ran in the previous paragraphs should address the possible impact of omitted variables on the FIO-SOX relationship. In addition, the use of year dummies in all of our models should capture the effect of cross-sectional dependence, that is, market-wide effects that could influence FIO. However, we run a further model specification, where instead of the year dummies we add two variables, which capture macroeconomic conditions; one that proxies for the implied risk in the U.S. economy (the Chicago Board Options Exchange Volatility Index; *VIX*) and another that captures the global economic growth (the weighted average GDP growth for all of the countries represented in our dataset; *WVGDP*). Even under this specification, the *SOX* coefficient remains positive and highly significant (untabulated result).

6.5. Further Tests

The extant literature on institutional investment has provided evidence of reverse causality between institutional ownership levels and specific firm characteristics, for example firm size and profitability. Therefore, some of the base (not marginal) effects we report in our tables could be interpreted based on reverse causality inferences. Regarding this issue, we would like to point out that the level of foreign institutional ownership is small compared to that of domestic institutions. At its peak, the average foreign ownership is 8%, compared to more than 60% for domestic institutions. Therefore, the impact of FII on firm characteristics should be minimal. In addition, in order to alleviate reverse causality concerns, we exclude from our

sample any foreign investors with more than 10% equity holdings in a specific firm, and re-run our analyses (untabulated result). The results remain unchanged.

We also test two model specification choices we have made in this paper, namely the clustering of standard errors at the firm level and the use of firm fixed effects. In all our regressions, we cluster the standard errors at the firm level to account for time-series dependence. We re-estimate the model in equation 1, but now cluster the standard errors at the industry level, using the two-digit SIC classifications. The *SOX* coefficient remains positive and significant (untabulated result). We also re-run the analyses for the other three hypotheses. The results remain unchanged (untabulated result). Furthermore, we test the accuracy of the fixed effect specification. Firstly, we run the Breusch and Pagan (1980) Lagrange multiplier test to identify the existence of random effects. We reject the null hypothesis that the variance of the random firm effects equals zero. Thus, the random effect model is preferred to OLS. Secondly, we run a Hausman (1978) test and strongly reject the null hypothesis, which indicates that the fixed effect specification will give the most unbiased coefficients. We conclude that the firm fixed effect specification gives the most robust results.

Finally, we run a Variance Inflation Factors (VIF) analysis for our basic model to check whether our results are driven by multicollinearity. We find no indication of a bias.

7. Conclusions and Policy Implications

SOX was enacted to reinforce confidence in the U.S. markets after a number of high profile corporate scandals in the early part of this century. What has been the effect of the SOX Act on foreign institutional investment in U.S. firms? Has SOX had an impact on the investment preferences of FII? The passage of SOX has led to an increased level of disclosure by U.S.

firms; yet, little has been reported so far about the effects of such endeavor on foreign investment in U.S. firms, especially by institutional investors.

Using information on the holdings of institutional investors from 18 foreign countries, we find that the change in the information environment of U.S. firms has indeed positively impacted on foreign institutional investment levels. Consistent with our first hypothesis, we observe that FIO has increased subsequent to the enactment of SOX. We argue that this positive relationship is, *ceteris paribus,* a result of the enhanced corporate disclosure and the ensuing reduction in information asymmetry. Foreign investors are particularly sensitive to information asymmetries aggravated by governance problems and/or expropriation by insiders (Leuz, et al., 2010). However, the better internal accountability and monitoring control mechanisms induced by SOX in U.S. firms reduce information asymmetries and lessen investors' evaluation (agency) costs, perceived risks and biases. The overall level of trust in U.S. firms is elevated, and the prospect of investing in them becomes more attractive (Forbes, 2010; Healy, et al., 1999). This result affirms the initial expectations from the SOX enactment; the implementation of the act has been successful in achieving one of its objectives – reduction in information asymmetry. It further strongly denotes the critical role of corporate disclosure policies in FII investment.

Interestingly, we not only find an increase in foreign institutional investment, post-SOX, but also changes in FII investment preferences. We document two intriguing results. First, post-SOX, FII exhibit a shift in their investment behavior towards less prudent stocks. Contrary to the 'prudent man' rule according to which we would anticipate institutional investors investing in the most reliable firms – large firms with high turnover, high liquidity and typically global exposure (Badrinath, et al., 1989; Del Guercio, 1996) – we find that post-

SOX, FII have increased their investment in smaller firms, firms with lower dividend yields, and firms with higher leverage. We therefore conclude that the investment shortcomings foreign investors typically associate with riskier firms can be subdued with increased information disclosure induced by the enactment of SOX.

Second, in line with Hypotheses 3 and 4, we discover that the increase in passive FIO has been larger than that of active FIO, post-SOX. We argue that this is driven by a reduction in the value of private information, post-SOX. Passive investors incur high costs of monitoring their investments; hence they rationally abstain from monitoring (Brickley, et al., 1988). As a result they do not collect private information. On the contrary, active investors' competitive advantage lies on their efficiency in collecting private information (Almazan, et al., 2005). Better disclosure results in a reduction in the value of private information. Hence SOX provides high gains for passive investors and potentially a loss of competitive advantage for the active ones. Our results strongly support this line of reasoning; we uncover that not only passive foreign investment has increased more than active foreign investment post-SOX, but also that this trend is pronounced in stocks with high levels of private information.

Overall, our study makes a unique contribution in two distinct ways. First, we provide a theoretical explanation (information symmetry framework) as well as empirical evidence on the SOX consequences so far and their implications. Second, from a policy perspective, we directly respond to the question of whether SOX has been effective and in what extent, and offer judgments in terms of investor benefits and market mechanism. The results particularly highlight a positive effect of the enactment of SOX, namely higher foreign institutional investment in U.S. firms. Further, firms that were traditionally overlooked by foreign institutional investors are now attracting their attention, resulting in a more evenly distribution

of investment among small and large firms. Future research should investigate the potential implications of this trend.

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Table 1.
Descriptive Statistics

PANEL A: Market Level Institutional Ownership

Variable	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*
FI	4.01%	3.95%	4.70%	4.63%	2.81%	6.26%	6.66%	7.00%	7.75%	8.42%	6.07 %	5.55%	6.10%	6.56%
Active	1.30%	1.04%	1.20%	0.85%	0.86%	0.88%	1.10%	1.60%	1.68%	1.79%	1.85%	0.85%	0.94%	1.02%
Passive	2.71%	2.91%	3.50%	3.78%	1.95%	5.38%	5.56%	5.40%	6.07%	6.63%	4.22%	4.70%	5.16%	5.54%
PC	68%	74%	74%	82%	69%	86%	83%	77%	78%	79%	69%	85%	85%	84%

PANEL B: Firm Level Characteristics

Variable	*N*	*MEAN*	*SD*	*P25*	*P50*	*P75*
FIO	15,887	5.352	3.441	2.843	4.893	7.089
ACTIVEFIO	15,887	1.033	1.556	0.150	0.511	1.180
PASSIVEFIO	15,887	4.242	2.883	2.190	3.780	5.602
PASSCONS	15,887	0.799	0.211	0.727	0.870	0.949
SIZE (billions)	15,887	7.514	17.769	0.732	1.808	5.571
DY	15,887	0.014	0.020	0.000	0.006	0.021
BM (log)	15,887	-0.841	0.726	-1.238	-0.769	-0.375
TURN	15,887	0.206	0.169	0.099	0.160	0.258
LEV	15,887	0.211	0.167	0.058	0.200	0.325
ROE	15,887	0.104	0.298	0.058	0.118	0.180
CASH	15,887	0.142	0.163	0.025	0.074	0.204
DINDEX	15,887	1.671	0.925	1.000	2.000	2.000
R&D	15,887	0.026	0.047	0.000	0.000	0.032
RETURN	15,887	7.014	6.014	2.514	6.777	9.345
ANALYST	15,887	13.422	9.074	6.000	11.000	18.000
AUDIT	15,887	0.929	0.258	1.000	1.000	1.000

This table reports descriptive statistics on market-level institutional ownership, as well as the firm characteristics of our sampled firms. Panel A reports the fraction of shares held by foreign institutional investors (FII) investing in the U.S. between 1999 and 2012. Institutional ownership at the market level is defined as the sum of the institutional investor holdings at fiscal year-end, divided by the sum of total shares outstanding, for all of the firms in our sample. FI is the investment level of FII investing in S&P 1500 firms. Active is the level of investment in S&P 1500 firms by active FII. Passive is the investment level of passive FII investing in S&P 1500 firms. PC is the concentration of passive investment defined as the ratio of passive to total foreign institutional investment. Panel B reports the descriptive statistics for the firm-level variables used in this study. All firm-level variables are defined in the main body of the paper. *Mean*, median (*P50*), standard deviation (*SD*), 25th percentile (*P25*) and 75th percentile (*P75*) are reported. *N* is the number of observations.

Table 2
The SOX Effect on Foreign Institutional Investment

Variable	*FIO*	*ACTIVEFIO*	*PASSIVEFIO*
SOX	4.871***	0.190^{+}	4.647***
	[0.000]	[0.058]	[0.000]
SIZE	0.006^{+}	0.002	0.004
	[0.088]	[0.163]	[0.281]
DY	5.030*	2.241^{+}	2.963
	[0.031]	[0.052]	[0.122]
BM (log)	0.237**	0.050	0.189**
	[0.002]	[0.227]	[0.004]
TURN	1.177***	0.107	1.081***
	[0.001]	[0.514]	[0.000]
LEV	0.034	0.311^{+}	-0.196
	[0.931]	[0.096]	[0.579]
ROE	0.227^{+}	-0.031	0.266**
	[0.060]	[0.669]	[0.006]
CASH	0.978*	-0.256	1.215***
	[0.016]	[0.199]	[0.001]
DINDEX	-0.098*	-0.016	-0.075*
	[0.011]	[0.426]	[0.033]
RETURN	0.024***	0.007^{+}	0.016***
	[0.000]	[0.098]	[0.000]
ANALYST	0.067***	0.011*	0.057***
	[0.000]	[0.011]	[0.000]
AUDIT	0.194	-0.004	0.194
	[0.210]	[0.959]	[0.174]
Constant	2.443***	1.012***	1.393***
	[0.000]	[0.000]	[0.000]
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
R-squared	0.362	0.111	0.378
N	15,887	15,887	15,887

This table shows the effect of the Sarbanes-Oxley Act on foreign institutional investment in U.S. listed firms. The numbers in brackets are p-values. ***, **, *, and $^{+}$ denote significance at the 0.1%, 1%, 5% and 10% levels, respectively. *N* is the number of observations.

Table 3

The SOX Effect on the Firm-Level Preferences of Foreign Investors

Variable	*FIO*	*ACTIVEFIO*	*PASSIVEFIO*
*SIZE*SOX*	-0.012***	0.000	-0.010***
	[0.000]	[0.791]	[0.000]
*DY*SOX*	-4.776	0.835	-5.360*
	[0.181]	[0.637]	[0.050]
*BM*SOX*	0.024	0.100^{+}	-0.059
	[0.810]	[0.082]	[0.480]
*TURN*SOX*	2.176***	-0.216	2.417***
	[0.000]	[0.315]	[0.000]
*LEV*SOX*	1.010*	0.545**	0.481
	[0.020]	[0.010]	[0.172]
*ROE*SOX*	0.066	-0.190	0.256^{+}
	[0.731]	[0.123]	[0.078]
*CASH*SOX*	-0.174	-0.013	-0.096
	[0.687]	[0.958]	[0.800]
*DINDEX*SOX*	-0.241***	-0.020	-0.217***
	[0.000]	[0.560]	[0.000]
*RETURN*SOX*	0.030**	0.019*	0.010
	[0.005]	[0.013]	[0.216]
*ANALYST*SOX*	0.027***	0.006	0.020**
	[0.000]	[0.235]	[0.001]
*AUDIT*SOX*	0.339	-0.138	0.518**
	[0.135]	[0.213]	[0.003]
SOX	3.896***	0.100	3.747***
	[0.000]	[0.630]	[0.000]
SIZE	0.017***	0.002	0.013**
	[0.001]	[0.334]	[0.002]
DY	9.128**	1.837	7.280**
	[0.005]	[0.270]	[0.005]
BM (log)	0.192*	-0.012	0.195**
	[0.028]	[0.817]	[0.006]
TURN	-0.310	0.192	-0.513
	[0.417]	[0.316]	[0.120]
LEV	-0.706^{+}	-0.006	-0.627^{+}
	[0.100]	[0.979]	[0.085]
ROE	0.168	0.118	0.059
	[0.192]	[0.164]	[0.532]
CASH	1.094*	-0.233	1.262**
	[0.019]	[0.404]	[0.001]
DINDEX	0.055	-0.002	0.062
	[0.244]	[0.942]	[0.104]
RETURN	0.003	-0.007	0.010^{+}
	[0.730]	[0.243]	[0.055]
ANALYST	0.040***	0.007	0.036***
	[0.000]	[0.187]	[0.000]
AUDIT	0.074	0.073	-0.028
	[0.729]	[0.540]	[0.867]

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Constant	2.916***	1.067***	1.817***
	[0.000]	[0.000]	[0.000]
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
R-squared	0.368	0.113	0.386
N	15,887	15,887	15,887

This table presents the firm level preferences of foreign institutional investors (FII), post-SOX. The numbers in brackets are p-values. ***, **, *, and $^{+}$ denote significance at the 0.1%, 1%, 5% and 10% levels, respectively. *N* is the number of observations.

Table 4

Heterogeneous Effect of the Sarbanes-Oxley Act

Variable	*PASSCONS*	*PASSCONS*	*PASSCONS*
SOX	0.091***	0.080***	0.072***
	[0.000]	[0.000]	[0.000]
*R&D*SOX*	-	0.370***	-
		[0.000]	
R&D	-	0.052	-
		[0.717]	
*RD*SOX*	-	-	0.037***
			[0.000]
SIZE	-0.000^{+}	0.000	-0.000^{+}
	[0.067]	[0.166]	[0.069]
DY	-0.171	-0.181	-0.240
	[0.186]	[0.159]	[0.119]
BM (log)	0.011^{+}	0.011*	0.017**
	[0.057]	[0.047]	[0.005]
TURN	-0.005	0.010	0.006
	[0.789]	[0.636]	[0.809]
LEV	0.002	0.002	0.002
	[0.940]	[0.926]	[0.938]
ROE	0.007	0.008	0.012
	[0.386]	[0.284]	[0.172]
CASH	0.050^{+}	0.057*	0.038
	[0.068]	[0.040]	[0.201]
DINDEX	0.000	0.000	-0.001
	[0.980]	[0.996]	[0.854]
RETURN	-0.001*	-0.001^{+}	-0.001
	[0.045]	[0.052]	[0.289]
ANALYST	0.001	0.001	0.001
	[0.133]	[0.159]	[0.126]
AUDIT	0.007	0.010	0.008
	[0.576]	[0.413]	[0.539]
Constant	0.764***	0.755***	0.761***
	[0.000]	[0.000]	[0.000]
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
R-squared	0.207	0.209	0.217
N	15,887	15,887	15,887

This table presents the SOX effect on passive institutional ownership concentration. The numbers in brackets are p-values. ***, **, *, and $^{+}$ denote significance at the 0.1%, 1%, 5% and 10% levels, respectively. *N* is the number of observations.

Table 5

Difference-in-Differences using Accelerated Filers

Variable	*FIO*	*ACTIVEFIO*	*PASSIVEFIO*
SOX	0.666*	-0.206	0.765***
	[0.013]	[0.158]	[0.000]
*ACCE*SOX*	0.538*	-0.471**	0.937***
	[0.043]	[0.001]	[0.000]
ACCE	1.714***	0.518***	1.207***
	[0.000]	[0.000]	[0.000]
SIZE	0.003**	0.000	0.003**
	[0.005]	[0.448]	[0.002]
DY	9.466***	0.450	9.173***
	[0.000]	[0.531]	[0.000]
BM (log)	-0.035	-0.079***	0.072**
	[0.313]	[0.000]	[0.010]
TURN	1.467***	0.701***	0.835***
	[0.000]	[0.000]	[0.000]
LEV	1.212***	0.245***	0.850***
	[0.000]	[0.000]	[0.000]
ROE	0.251**	-0.019	0.278***
	[0.004]	[0.724]	[0.000]
CASH	-0.017	-0.052	0.048
	[0.905]	[0.491]	[0.684]
RETURN	0.006	-0.001	0.003
	[0.178]	[0.809]	[0.342]
ANALYST	0.064***	0.024***	0.040***
	[0.000]	[0.000]	[0.000]
AUDIT	0.717***	0.201***	0.497***
	[0.000]	[0.000]	[0.000]
Constant	-0.397**	-0.021	-0.301**
	[0.002]	[0.776]	[0.007]
Year FE	Yes	Yes	Yes
Firm FE	No	No	No
R-squared	0.310	0.115	0.331
N	19,995	19,995	19,995

This table reports a difference-in-differences regression on the investment preferences of foreign institutional investors (FII). The numbers in brackets are p-values. ***, **, *, and $^{+}$ denote significance at the 0.1%, 1%, 5% and 10% levels, respectively. *N* is the number of observations.

Table 6

Propensity Score Matching Estimators

PANEL A: FIO

Matching Algorithm	*N=19,995*	*Treated (ACCE*SOX)*	*Controls (Matched Firms)*	*Difference in FIO*	*p-value of Diff.*
Radius	ATT	5.635	3.797	1.838	0.000***
NN(1)	ATT	5.635	3.853	1.782	0.000***
NN(3)	ATT	5.635	3.811	1.824	0.000***
NN(5)	ATT	5.635	3.825	1.810	0.000***
Kernel	ATT	5.635	3.791	1.844	0.000***

PANEL B: ACTIVEFIO

Matching Algorithm	*N=19,995*	*Treated (ACCE*SOX)*	*Controls (Matched Firms)*	*Difference in ACTIVEFIO*	*p-value of Diff.*
Radius	ATT	0.988	1.080	-0.092	0.001***
NN(1)	ATT	0.988	1.118	-0.130	0.000***
NN(3)	ATT	0.988	1.100	-0.112	0.000***
NN(5)	ATT	0.988	1.097	-0.109	0.000***
Kernel	ATT	0.988	1.069	-0.081	0.003**

PANEL C: PASSIVEFIO

Matching Algorithm	*N=19,995*	*Treated (ACCE*SOX)*	*Controls (Matched Firms)*	*Difference in PASSIVEFIO*	*p-value of Diff.*
Radius	ATT	4.543	2.692	1.851	0.000***
NN(1)	ATT	4.543	2.709	1.834	0.000***
NN(3)	ATT	4.543	2.687	1.856	0.000***
NN(5)	ATT	4.543	2.704	1.839	0.000***
Kernel	ATT	4.543	2.698	1.845	0.000***

This table presents the SOX effect on foreign institutional investment by comparing the average ownership levels between firms that receive the SOX treatment (*ACCE*SOX*) and control firms identified using various marching algorithms. Panels A, B and C present the differences for *FIO*, *ACTIVEFIO* and *PASSIVEFIO*, respectively. *ATT* denotes that the reported differences are the average treatment effects on the treated. *N* is the number of observations used in the propensity score calculations. *** and ** denote significance at the 0.1% and 1% levels, respectively.

Table 7

Falsification Tests – Monte Carlo Permutation

	True Coef.	*Random Shuffle Coef.>True Coef.*	*No. of Trials*	*Implied p-value*
FIO				
*ACCE*SOX*	0.538	0	10,000	0.000
ACTIVEFIO				
*ACCE*SOX*	-0.471	0	10,000	0.000
PASSIVEFIO				
*ACCE*SOX*	0.937	0	10,000	0.000

This table reports the results of Monte Carlo permutation tests where the treatment variable (*ACCE*SOX*) is randomly shuffled 10,000 times. The tests are performed separately for *FIO*, *ACTIVEFIO* and *PASSIVEFIO*. *True Coef.* denotes the *ACCE*SOX* coefficients estimated by running the models presented in table 5. The next column reports the number of times the coefficient of the randomly shuffled (placebo) treatment variable is larger than the true coefficient.

Endnotes

[i] At its peak (in 2008), the FII equity holding in the average U.S. firm in our sample is 8.4%. This translates to an investment of $580 million, given that the average market capitalization is $6.9 billion. The FII investment in the average U.S. firm is twice this firm's investment in research and development and more than twice its capital expenditures (not reported). Therefore, FII investment in U.S. firms is not trivial.

[ii] SOX is a United States federal law that set enhanced standards to improve the accuracy and reliability of disclosure across the board for all U.S. listed firms. It was enacted as an attempt to restore trust in the U.S. capital markets after several high-profile corporate scandals (Li, et al., 2008).

[iii] The recent report by the Congressional Research Service charts the rise of foreign ownership of U.S. financial assets over the last decade and discusses the benefits and costs of such changes in ownership of U.S. assets. Throughout the report, trust in the U.S. capital markets is highlighted as one of the main reasons behind the increase in foreign investment.

[iv] Merton's (1987) model predicts that rational investors have a strong preference for firms they are better informed about. Huberman (2001) theoretically developed this argument in the context of behavioral biases and coined the phrase "familiarity breeds investment". Chan, et al. (2005) identify familiarity as one of six determinants of domestic/foreign bias. In their theoretical model, these six determinants affect the deadweight costs of investing in a particular country, hence the extent of the bias.

[v] The idea of a SOX-led improvement in the U.S. information environment is also supported by indirect evidence. Johnston and Madura (2009) report better Initial Public Offering (IPO) performance, that is, lower underpricing and higher post-IPO performance, for U.S. firms, which they attribute to the enhanced transparency brought about by SOX provisions.

[vi] Under the constraint of the 'prudent man' rule, institutional investors have incentives to protect themselves from liability by tilting their portfolios toward those assets that are easy to defend in court.

[vii] The data for this classification are available from http://acct3.wharton.upenn.edu/faculty/bushee/

[viii] Two databases, Thomson-Reuters 13F and Thomson One Banker, provide comprehensive, firm-level institutional investor ownership details for U.S. listed firms. We follow the extensive literature on institutional investment and use the 13F database as our data source. Thomson-Reuters 13F collects all the information contained in Form 13F filed with the Securities and Exchange Commission (SEC). U.S. law requires all institutional investors with $100m or more in assets under management to file a 13F form with the SEC.

[ix] We exclude American Depository Receipts (ADRs) and foreign stocks from our sample.

[x] Even though our dependent variable is censored at 0 and 100%, we decide against reporting the results of the censored regressions given there is no significant clustering of observations at either cut-off point. Our results remain qualitatively the same when we run censored regressions.

[xi] The definition of FIO does not allow for the use of investor fixed effects. Still, some of the unobserved investor characteristics that relate to their investment preferences will be captured by the firm fixed effects. In unreported results, we include in all our analyses country dummies. These capture unobserved heterogeneity in the foreign investor country of domicile, for example, geographic distance from the U.S., cultural and language differences, differences in legal background, and so on. The results remain unchanged.

[xii] Following Gompers and Metrick (2001), in order to calculate market-level institutional ownership variables we aggregate all institutional investor shareholdings (per category) and divide them by the sum of the shares outstanding for all of the firms in our sample. To avoid confusion, we use different variable names for the market level ownership variables (presented only in Table 1, Panel A), compared to the related firm level ones (used in the rest of the paper).

[xiii] We have also run several specifications (not reported here) using the component dummies of the DINDEX measure separately in order to examine the isolated effect of each dimension on foreign ownership. We conclude that most of these dimensions are important determinants of foreign ownership; however there is some heterogeneity depending on the type of foreign ownership examined (active vs. passive investors).

[xiv] In our regression analyses we use firm fixed effect panel regressions. Hence, our emphasis is on 'within firm time-series variation' of our covariates. Given our modelling approach, the R&D expenditure for each firm in our sample is the first difference from the time-series average R&D expenditure for this firm. Thus, we control for cross-sectional differences in the level of R&D expenditure, which is important given the expected differences between firms that belong to different industries.

[xv] The U.S. Securities and Exchange Commission (SEC) extended the compliance dates for non-accelerated filers on several occasions, so that they could improve the quality of their efforts. In 2010, a provision in the Dodd-Frank Act (Section 989G) made the exemption for non-accelerated filers permanent.

[xvi] Throughout our previous analyses, we control for the level of corporate governance quality (*DINDEX*). This restricts our sample to 15,887 observations due to missing values in *DINDEX*; most of the data unavailability is for smaller firms. This leaves us with very few non-accelerated filers in our sample. Given the importance of this

sub-group of firms for the analysis of this section, we exclude *DINDEX* in order to capture more non-accelerated filers. None of our previous analyses are sensitive to the decision to include *DINDEX*.

[xvii] In unreported analysis, we find that the negative *ACCE*SOX* coefficient for active FII is driven by their investment behaviour during the post financial crisis period. For the 1999-2008 period, the *ACCE*SOX* coefficient in column 2 is insignificant, whereas the *SOX* coefficient is negative significant. This indicates that in our setting (a) the expected retrenchment of capital during global crises (Forbes & Warnock, 2012) primarily affects active not passive FII and (b) the financial crisis affected the type of firms (accelerated vs. non-accelerated) active FII withdraw capital from. We have re-run all the analyses presented in this paper for the pre-crisis period alone, i.e., 1999-2006, and our main findings remain unchanged.